FAA-E-2492/3
November 3, 1971

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION SPECIFICATION

TURNKEY FACILITY ESTABLISHMENT FOR

INSTRUMENT LANDING SYSTEM

PART 3

SITE PREPARATION & PLANT CONSTRUCTION

3-1. SCOPE

3-1.1 Scope of Part 3.- This Part 3 is one of a group of specification documents under the basic heading Turnkey Facility Establishment for Instrument Landing System, each of which carries the basic number FAA-E-2492 with a slant line and number corresponding to the part number. Part 3 contains requirements applicable to the equipment, materials and personnel services for site preparation and plant construction. This Part supplements the General Requirements contained in Part 1 of this specification.

3-2. APPLICABLE DOCUMENTS

3-2.1 FAA documents.- The following FAA specifications, handbooks, orders, and drawings of the issued specified in the invitation for bids or request for proposals, form a part of this specification and are applicable as modified herein.

3-2.1.1 FAA specifications.-

CAA-566	Specification for Concrete
FAA-1391	Installation and Splicing of Underground Cable
FAA-C-95	Driveway Construction, Gravel Surfaced
FAA-E-2022	Substation, Power Distribution Transformer, Metalclad
FAA-E-2065	Fences
FAA-C-2454	Facility Site Preparation

3-2.1.2 FAA Handbook.-

Handbook 6750.6A	Installation Instructions for the ILS Glide Slope
Handbook 6750.16	Siting Criteria for Instrument Landing Systems

3-2.1.3 FAA drawings.-

D-4403-5	Middle and Outer Compass Locator--Markers Typical Plot Layout
D-4898	Compass Locator, Flat Top "T", Antenna Details and Erection
C-5186	Transformer Pad for Metal Clad Sub-Station Structural Details
D-5467-2	Metalclad Transformer Substation, for 25 KVA Transformer and Smaller, Installation Details
D-5597	Chain Link Fence Details
D-5778-7	Mark I Localizer/Glide Slope Plan and Elevation
D-5778-9	Trailer, Van Type Electronic Facility Concrete Foundation Details
D-5818-1	Marker Beacon Station Pole Mounted
D-5849-1	Localizer V-ring Array Support Concrete Slab on Grade
D-5849-2	Localizer V-ring Array Support Concrete Slab on Footings

D-5859-1	Localizer V-ring Array Platform Plan Elevation and Details
D-5859-2	Localizer V-ring Array Platform Bracing Elevations and Details
D-5859-3	Localizer V-ring Array Platform Miscellaneous Details
D-5942-1	Glide Slope Station Layout and Electrical Details
D-5942-2	Glide Slope Station Null Reference Antenna and Monitor Mast
D-5942-3	Glide Slope Station Capture Effect Antenna Mast
D-5942-4	ILS Mark I Localizer Station Layout and Electrical Details
C-50963	Mark I ILS Localizer V-Ring Array Equipment--Antenna System Interconnecting Cable Diagram
D-50957-4	Installation Details for Pole Mounted Marker
D-50958	Solid State Marker/COMLO/Far Field Monitor Equipment Layout in Existing Shelters

(Copies of these specifications and other applicable FAA speicifcations, handbooks and drawings may be obtained from the Contracting Officer in the Federal Aviation Administration Office issuing the invitation for bids or request for proposals. Request should fully identify material desired i.e., specification, handbook, and drawing numbers and dates. Requests should cite the invitation for bids, request for proposals, or the contract involved or other use to be made of the requested material.)

3-2.2 Other publications.- The following publications of the issues in effect on the date of the invitation for bids or request for proposals form a part of this specification and are applicable to the extent specified herein.

NFPA No. 70	National Electrical Code

(Information on obtaining copies of the National Electrical Code may be obtained from the National Fire Protection Association, 60 Battermarch Street, Boston, Massachusetts 02110.)

3-3. REQUIREMENTS

3-3.1 Equipment and services to be furnished by the contractor.- The contractor shall provide all equipments, materials, and personnel services in accordance with this part of the specification.

3-3.2 Site clearing and grading.- The contractor shall accomplish all clearing, grubbing, and grading required to prepare all sites for installation of the ILS subsystems, except work that is the specific responsibility of the government or airport sponsor. Work shall be in accordance with the engineering report and the requirements of FAA-C-2454.

3-3.3 Earthwork.- All excavation, filling and backfilling shall be accomplished in accordance with the engineering report, construction drawings, and requirements of FAA-C-2454. Excavated material not suitable or required for backfilling shall be disposed of by the contractor with the approval of the FAA TR.

3-3.4 Concrete work.- All concrete shall conform to CAA-566 for Class II concrete having a 28-day strength of not less than 3,000 pounds per square inch. Concrete work shall be in accordance with the engineering report, construction drawings, and requirements of FAA-C-2454. All foundation designs shall be site adapted by the contractor as necessary to meet local soil conditions.

3-3.5 Localizer antenna support structure.- The contractor shall furnish and construct a slab-on-grade support or elevated platform support as required by the engineering report. The concrete slab-on-grade shall be in accordance with Drawing D-5849-1 or D-5849-2 as required by the engineering report. The wood elevated platform shall be constructed in accordance with Drawings D-5859-1 through 3 to the height required by the engineering report.

3-3.5.1 Localizer antenna installation.- The localizer antenna shall be installed on the support structure in accordance with the installation instructions contained in the equipment instruction book.

3-3.6 Glide slope antenna tower installation.- The contractor shall install the glide slope antenna tower and monitor mast (for either null reference or capture effect system as applicable) in accordance with Drawings D-5942-1, D-5942-2 and D-5942-3. The contractor shall disregard Notes 1 through 5 on D-5942-1, Notes 3 and 4 on D-5942-2, and Notes 2 and 3 on D-5942-3. The tower shall be erected on the concrete foundation as indicated. The obstruction lights shall be installed and operate continuously after the tower has reached a height of 20 feet. After tower installation is completed, the conduit, junction boxes, etc., shall be painted orange and white to match adjacent tower surfaces. Note that the monitor mast shall be installed after the contractor has performed the preliminary flight inspection in accordance with Handbook 6750.6A, Paragraph 12.

3-3.7 Trailer installation.- The contractor shall construct the localizer and glide slope trailer foundations and install the trailers in accordance with Drawing D-5778-9. Each trailer shall be mounted on its foundation and bolted down as indicated. The localizer trailer shall be located in accordance with Drawing D-5942-4 and the glide slope trailer shall be located in accordance with Drawing D-5942-1.

3-3.8 Theodolite support.- The contractor shall construct a concrete slab for the theodolite at both the glide slope and localizer sites. The exact location of the supports will be established in accordance with USSFIM OA P 8200.0, Section 217 (217.32) and coordinated with the FAA TR. The theodolite pad for the glide slope shall not be installed until the preliminary flight inspection (4-3.7.2) is completed.

3-3.8.1 Ground check points.- Ground check point markers shall be provided for the localizer antenna system in accordance with Drawing D-5942-4.

3-3.9 Markers antenna pole.- The contractor shall furnish and install the antenna poles at both the middle and outer markers in accordance with Drawing D-5818-1.

3-3.10 COMLO antenna installation.- The contractor shall furnish and install compass locator antennas in accordance with all the details of Drawing D-4898.

3-3.11 Installation of underground cables.- Installation of underground cables shall be in accordance with the requirements of Specification FAA-1391, Part I. All underground power cable shall be armor sheathed cable with locations subject to airport authority approval. If splicing of cables is necessary, it shall be performed in accordance with Specification FAA-1391, Part IV. All splice locations shall be indicated on the "as built" drawings (1-3.5.6).

3-3.12 Installation of localizer cables.- The contractor shall furnish and install all cabling (power, control and coaxial) between the trailer and localizer antenna array. At the trailer the power cables shall be terminated in the power distribution panel. The cables shall be installed by direct burial or in conduit as required by the engineering report. Drawing C-50963 may be used in this regard for information purposes only.

3-3.13 Installation of glide slope cables.- The contractor shall furnish and install all cabling (power, control and coaxial) between the trailer and the antennas (transmitting and monitoring). The cables shall be installed by direct burial or in conduit as required by the engineering report. Drawing D-5942-1 may be used in this regard for information purposes only.

3-3.14 Installation of marker and COMLO cables.- The contractor shall furnish and install all cabling for the marker(s) station, including compass locator where required. Refer to Drawings D-5818-1, D-50957-4, D-50958 and D-4403-5 for details to be used for information purposes only.

3-3.15 Primary power installation.-

3-3.15.1 General requirements.- The contractor shall be responsible for providing for the installation of commercial power service from a termination point, designated by the FAA, to various facility sites. All costs incurred in providing service as specified in 1-3.2.11 including a termination pole if required, shall be borne by the government. The contractor shall procure and install all power cables, transformer, and other materials required to provide 120/240 volt AC commercial power to the localizer and glide slope and 120 volt AC commercial power to the middle marker and outer marker facilities. The power cable installations shall be underground and comply with Specification FAA-1391. All electrical service terminations shall be performed by the contractor to conform to the National Electrical Code and local state and city requirements. The contractor shall provide metalclad power distribution transformer substations in accordance with Specification FAA-E-2022 and Supplement -1. Lightning arrestors shall be installed on all incoming power service. All costs for power usage until facility acceptance shall be borne by the contractor.

3-3.15.2 Localizer and glide slope.- Concrete substation pads shall be constructed in accordance with Drawing C-5186. Substations shall be installed in accordance with Drawing D-5467-2. The locations and size of the transformers required shall be shown on the applicable localizer and glide slope site drawings. When the transformer is located at the facility site the power cable shall be routed through three-inch conduit underground from the transformer pad to the equipment trailer and terminated in the power distribution panel as shown on Drawing D-5778-8. If the transformer is located at a remote point from the site the power cable shall approach the site underground and enter the trailer through three-inch galvanized steel conduit sweep ells and risers as necessary. The armor shall be stripped from the cable inside the building and properly grounded in the cable junction box.

3-3.15.3 Middle marker and outer marker (locator).- The power cable at the middle marker and outer marker site shall be underground for a distance of one hundred feet and shall be installed and terminated at the cut-out safety switch located on the marker station pole as shown on Drawing D-5818-1. At facilities designated for compass locator the power cable shall be terminated in the power distribution panel in the shelter as indicated on Drawing D-50958.

3-3.16 Driveway construction, gravel surfaced.- The contractor shall construct service roads and parking areas in accordance with Specification FAA-C-95 at the locations approved in the engineering report by the government.

3-3.16.1 Paved surfaces.- When it is required that the facility access road intersect or terminate at paved runways or taxiways, the initial 300 feet adjacent to the runway or taxiway will be asphalt paved. The paving shall be in accordance with Section 2-4 of Specification FAA-C-2454.

3-3.17 Fences.- Enclosures shall be provided for markers (outer and middle) and compass locators as shown in Chapter 4, Paragraph 34 of Handbook 6750.16 when specified in the invitation for bids or request for proposals. All marker fences shall be Type I, Class F steel chain link fence with three strands of barbed wire in accordance with Specification FAA-E-2065 and Drawing D-5597. Collocated compass locator/marker facility fences shall be in either Type I, Class F steel chain link with three strands of barbed wire in accordance with Specification FAA-E-2065 and Drawing D-5597 or Type II, Class C fence with metal gates in accordance with Specification FAA-E-2065 as specified in the invitation for bids or request for proposals.

3-3.18 Joint inspection.- Prior to proceeding with installation, tuneup and preliminary checks (Part 4 of this specification), the contractor shall demonstrate to the satisfaction of the government, compliance with the site engineering report approved by FAA as it relates to the site preparation and plant construction and also with all the paragraphs of Part 3 of this specification. Notice of readiness for joint inspection must be provided to the FAA TR five days prior to the scheduled date for inspection.

3-4. QUALITY ASSURANCE PROVISIONS

3-4.1 Not applicable

3-5. PREPARATION FOR DELIVERY

3-5.1 Not applicable

3-6. NOTES

3-6.1 None